UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

May 12, 2006

Duke Energy Corporation
ATTN: Mr. D. M. Jamil
Site Vice President
Catawba Nuclear Station
4800 Concord Road
York, SC 29745

SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000413/2006002 AND 05000414/2006002

Dear Mr. Jamil:

On March 31, 2006, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Catawba Nuclear Station Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on April 12, 2006, with you and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents two NRC-identified findings of very low safety significance (Green) which were determined to be violations of NRC requirements. However, because of their very low safety significance and because these violations were entered into your corrective action program, the NRC is treating these violations as non-cited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC, 20555-0001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC, 20555-0001; and the NRC Resident Inspector at the Catawba Nuclear Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document

Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at *www.nrc.gov/reading-rm/adams.html* (the Public Electronic Reading Room).

Sincerely,

/RA/

D. Charles Payne, Acting Chief
Reactor Projects Branch 1
Division of Reactor Projects

Docket Nos.: 50-413, 50-414
License Nos.: NPF-35, NPF-52

Enclosure: Integrated Inspection Report 05000413/2006002
and 05000414/2006002
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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NAME	C. Rapp	E. Guthrie	S. Walker	A. Sabisch	N. Staples		
DATE	5/11/2006	5/11/2006	5/11/2006	5/11/2006	5/11/2006		
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Letter to D. M. Jamil of Duke Energy Corporation dated April 27, 2006

SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000413/2006002 AND 05000414/2006002

Distribution w/encl:
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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-413, 50-414
License Nos.:	NPF-35, NPF-52
Report No.:	05000413/2006002 and 05000414/2006002
Licensee:	Duke Energy Corporation
Facility:	Catawba Nuclear Station, Units 1 and 2
Location:	4800 Concord Road York, SC 29745
Dates:	January 1, 2006 through March 31, 2006
Inspectors:	E. Guthrie, Senior Resident Inspector A. Sabisch, Resident Inspector S. Walker, Acting Senior Resident Inspector N. Staples, Reactor Inspector (Section 4OA5)
Approved by:	D. Charles Payne, Acting Chief Reactor Projects Branch 1 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000413/2006-002, 05000414/2006-002; 1/1/2006 - 3/31/2006; Catawba Nuclear Station, Units 1 and 2; Maintenance Risk Assessments and Emergent Work Evaluation and Other Activities

The report covered a three-month period of inspection by three resident inspectors and a reactor inspector. Two Green NRC-identified non-cited violations (NCVs) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," (ROP) Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. An NRC-identified NCV was identified for the failure to adequately assess and manage the risk pertaining to a portion of the maintenance activities associated with the removal of the A train of nuclear service water (RN) from service for a planned 14-day outage as required by 10 CFR 50.65(a)(4).

  The finding was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring that the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences is maintained. The inspectors determined that the finding was of very low risk significance (Green), based on the resulting magnitude of the calculated Incremental Core Damage Probability (5.8E-7/day), the length of time that the two A train diesels were unavailable ($\leq$18 hours) and that no actual loss of safety function of the 2B DG occurred. This finding involved the cross-cutting aspect of human performance. (Section 1R13)

- Green. An NRC-identified NCV of Catawba Nuclear Station (CNS) Operating License Condition 2.C.5, Fire Protection Program (FPP), was identified. The licensee made a change to the approved fire protection program which had the potential to affect post-fire safe shutdown capability. Specifically, the licensee derated the time requirement for 43 battery powered emergency lighting units (ELUs) from 8 hours to 1.5 hours. The evaluation for this change was not adequate to ensure that derating the ELUs would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

  This finding is more than minor because it had the potential to impact the licensee's post-fire safe shutdown capability by delaying operator response in the event of a loss of power to normal lighting during a fire. The finding was of very low risk significance (Green) because operators would likely be able to accomplish the actions with the use of flashlights. (Section 4OA5.1)

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period operating at 100 percent (%) Rated Thermal Power (RTP). Power was reduced to 65% RTP on March 25 to support swapping main turbine lube oil coolers due to a tube leak that had increased on the in-service cooler. The unit was returned to 100% power on March 26 and remained there through the end of the inspection period.

Unit 2 began the inspection period operating at 100% RTP. End-of-cycle power coast down commenced on March 14. Power was reduced to 94% on March 15 to conduct main steam safety relief valve testing and remained there until the unit was removed from service for a planned refueling outage on March 18. The unit remained off-line through the end of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

a. Inspection Scope

Partial System Walkdowns. The inspectors walked down the following five system alignments to verify that critical portions of equipment alignments remained operable while the redundant trains for that system were inoperable. The inspectors reviewed plant documents to determine the correct system and power alignments, as well as the required positions of selected valves and breakers. The inspectors reviewed equipment alignment problems which could cause initiating events or impact mitigating system availability to verify that they had been properly identified and resolved. Documents reviewed are listed in the Attachment.

- The B Train of nuclear service water (RN) when the A Train was removed from service for the 14-day Limiting Condition for Operation (LCO) to clean, coat, replace and repair the RN piping
- The B Train of component cooling water (KC) when the A Train of KC was removed from service as part of the 14-day RN train LCO period
- The A Train of RN when the B Train was removed from service for the 14-day LCO to clean, coat, replace and repair the RN piping
- Cross-train alignment of the KC system in support of the B Train RN LCO Allowed Outage Time (AOT)
- B Train of RN in the RN pump house structure when the A Train of RN was removed from service for the 14-day LCO

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

Fire Protection Walkdowns. The inspectors walked down accessible portions of the following eight plant areas to assess the licensee's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The inspectors observed the fire protection suppression and detection equipment to determine whether any conditions or deficiencies existed which could impair the operability of that equipment. The inspectors selected the areas based on a review of the licensee's safe shutdown analysis probabilistic risk assessment, sensitivity studies for fire-related core damage accident sequences, and summary statements related to the licensee's 1992 Initial Plant Examination for External Events submittal to the NRC. Documents reviewed are listed in the Attachment.

- Unit 1 Exterior Doghouse
- Main Control Room
- Unit 2 Auxiliary Feedwater Pump Room
- Unit 1 Mechanical Penetration Room, 543 foot elevation
- Unit 1 Electrical Penetration Room, 560 foot elevation
- Unit 2 Mechanical Penetration Room, 577 foot elevation
- Unit 1 Spent Fuel Building Fan Room, 636 foot elevation
- Nuclear Service Water Pump House

Fire Drill Observation. On March 3, the inspectors observed a shift fire drill simulating an oil fire in the Unit 1 Main Turbine Oil Tank room located on the 594 foot elevation of the turbine building. The purpose of this annual inspection was to: monitor the fire brigade's use of protective gear and fire fighting equipment; verify that fire fighting pre-plan procedures and appropriate fire fighting techniques were used; and verify that the directions of the fire brigade leader were thorough, clear, and effective. The inspectors also attended the subsequent drill critique to assess whether it was appropriately critical, included discussions of drill observations, and identified any areas requiring corrective action. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

Resident Quarterly Observation. The inspectors observed Active Simulator Exam Scenario 16 to assess the performance of licensed operators. The exercise included a loss of condenser vacuum, loss of 6.9 kV bus, loss of a reactor coolant pump, loss of normal power to an essential train, an Anticipated Transient without a Scram, and a

steam line break outside of containment. The inspection focused on high-risk operator actions performed during implementation of the emergency operating procedures, emergency plan implementation and classification, and the incorporation of lessons-learned from previous plant events. Through observations of the critique conducted by training instructors following the exam session, the inspectors assessed whether appropriate feedback was provided to the licensed operators regarding identified weaknesses.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the licensee's effectiveness in performing the two following routine maintenance activities. This review included an assessment of the licensee's practices pertaining to the identification, scope, and handling of degraded equipment conditions, as well as common cause failure evaluations and the resolution of historical equipment problems. For those systems, structures, and components (SSCs) scoped in the maintenance rule per 10 CFR 50.65, the inspectors verified that reliability and unavailability were properly monitored, and that 10 CFR 50.65 (a)(1) and (a)(2) classifications were justified in light of the reviewed degraded equipment condition. Documents reviewed are listed in the Attachment.

- Repair of a through-wall leak found on the B Train RN supply header between manways #8 and #9
- Repairs of the 1B Spent Fuel Pool Cooling Pump

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the licensee's assessments concerning the risk impact of removing from service those components associated with the eight emergent and planned work items listed below. This review primarily focused on activities determined to be risk significant within the maintenance rule. The inspectors also assessed the adequacy of the licensee's identification and resolution of problems associated with maintenance risk assessments and emergent work activities. The inspectors reviewed Nuclear System Directive (NSD) 415, Operational Risk Management (Modes 1-3) and NSD 403, Shutdown Risk Management (Modes 4,5,6, and No Mode), for appropriate guidance to comply with 10 CFR 50.65 (a)(4). Documents reviewed are listed in the Attachment.

- Entry and day-to-day activities related to the A Train of RN outage
- Entry and day-to-day activities related to the B Train of RN outage
- Schedule review and evaluation of planned/in-progress work following the discovery of a potential RN header leak
- Schedule review and evaluation of planned/in-progress work following the discovery of a potential RN header leak between manholes #8 and #9
- Schedule review and assessment of planned activities with Orange grid status due to problems at Belews Creek Steam Station
- Schedule review and assessment of planned activities on Unit 2 following the failure of the primary Digital Feedwater Control System controller and unexpected replacement of a pressurizer level transmitter
- Review and assessment of rescheduled major Unit 2 refueling outage activities due to failure of the Containment Closure Test
- Review and assessment of rescheduled major outage activities due to maintenance on 2B Spent Fuel Cooling Pump prior to core offload, failure of the Unit 1 Reactor Trip Breaker during surveillance testing, and a turbine lube oil transfer pipe leak

b. Findings

Introduction. A Green NCV of 10 CFR 50.65(a)(4) was identified by the inspectors for the licensee failing to adequately assess and manage the risk pertaining to a portion of the maintenance activities associated with the removal of the A Train of nuclear service water (RN) from service for a planned 14-day outage.

Description. On January 5, the A Train of nuclear service water (RN) was removed from service to allow for the header to be drained, inspected and refurbished due to ongoing degradation of the piping. The removal of the A Train of RN from service resulted in other equipment and systems being rendered inoperable including the 1A and 2A emergency diesel generators (DG). As part of the licensee amendment that granted a one-time extension of the normal 72-hour LCO allowed outage time (AOT) to 14 days, the licensee committed to implement a number of actions to manage the elevated risk created by this activity. These included providing temporary cooling to the DG via the fire protection system during the period the RN header was out of service and to protect equipment on the opposite train; i.e., the B Train and protecting the opposite train equipment when one train of RN was removed from service.

The A Train of RN was removed from service at approximately 2100 on January 5 and the 1A and 2A DGs were declared inoperable at that time. Installation of the temporary cooling lines from the fire protection system to the diesel jacket water heat exchangers did not commence until the morning of January 6, 2006 and was not worked continuously until completed (approximately 1300 for the 1A diesel and 1500 for the 2A diesel). The initial efforts were directed at restoring the 1A DG; however, the 2A DG was required for the operation of the 1A DG because the 2A DG powered the A fire pump which would be required to provide cooling to the A Train DGs on a loss of offsite power. This sequence requirement had not been identified by the licensee in scheduling the installation of the temporary cooling to the DGs prior to enter the 14-day LCO.

During the period of time in which the two A Train DGs were unavailable, a mobile crane traversed the roof area of the 2B DG on two occasions preparing to lift the 2A diesel room roof hatches. While the crane movement was done in accordance with an approved station procedure for the work on the 2A DG, the licensee did not consider the current plant condition; i.e., two of four DGs inoperable with both units in an Orange ORAM/SENTINEL risk condition. In addition, while the 2B DG itself had been posted with protected equipment signage, the roof area and support equipment such as the diesel lube oil storage tanks and the 2A/2B fire protection and carbon dioxide (CO_2) headers had not been posted. As a result of not protecting these components and areas, the crane movement had the potential to render the 2B DG inoperable leaving the station with only one operable DG in the event normal AC power was lost. On January 5, the A Train of RN was removed from service to allow for the header to be drained, inspected and refurbished due to ongoing degradation of the piping. The removal of the A Train of RN from service resulted in other equipment and systems being rendered inoperable including the 1A and 2A emergency DGs. As part of the licensee amendment that granted a one-time extension of the normal 72-hour LCO AOT to 14 days, the licensee committed to provide temporary cooling to the DG via the fire protection system during the period the RN header was out of service and to protect equipment on the opposite train; i.e., the B Train.

Analysis. Aspects of this maintenance work which demonstrated inadequate assessment and management during planned maintenance on the A Train of the RN system increased risk included the following:

The licensee's risk assessment failed to fully consider risk significant SSCs and support systems that were unavailable during the maintenance activities.

- Restoring the DGs to available status was a commitment made as part of the licensee amendment request submitted by the licensee. Work to restore the 1A and 2A DGs to available status was not initiated promptly when appropriate conditions were established nor was the work performed on a continuous basis until complete. In addition, the correct sequence of restoring the 2 DGs (2A followed by 1A) was not implemented. These actions would have minimized the Incremental Core Damage Probability value that resulted from this portion of the planned LCO activities.

The licensee's risk assessment failed to account for the possible unavailability of a single train of a system (primary or back-up) that provides a shutdown key safety function.

- The potential impact on the station's emergency AC power system due to movement of a mobile crane on the 2B DG roof in close proximity to support equipment was not considered in the risk assessment performed in support of the A Train RN LCO outage schedule nor once the outage.

The licensee failed to effectively implement or manage prescribed significant compensatory measures.

- As part of the license amendment request, the licensee committed to protect the 1B

and 2B diesel generators during the A Train LCO outage to minimize the overall station risk exposure and developed a plan to post the equipment when the LCO was entered. However, the roof area and adjacent support equipment was not included within this protected equipment boundary and as a result, work was allowed to be performed in close proximity to equipment which had the potential to adversely impact the operability of the 2B DG.

- Changes in work scope and activities conducted in the vicinity of the 2B DG were not communicated back to Operations or Engineering to ensure that the changes were assessed in a timely manner and did not affect the overall station risk values.

The finding was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems which respond to initiating events to prevent undesirable consequences is maintained. The inspectors determined that the finding is of very low risk significance (Green), based on the resulting magnitude of the calculated Incremental Core Damage Probability (5.8E-7/day), the length of time that the two A Train diesels were unavailable ($\leq$18 hours) and that no actual loss of safety function of the 2B DG occurred. This finding involved the cross-cutting aspect of human performance.

Enforcement. 10 CFR65 (a)(4), "Requirements for monitoring the Effectiveness of Maintenance at Nuclear Power Plants," requires in part, that prior to performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. Contrary to the above, on January 5 and 6, 2006, the licensee failed to implement the requirements of 10 CFR 50.65(a)(4) to adequately assess and manage the increase in risk during the execution of planned maintenance associated with the A Train of RN, which placed the station in an Orange ORAM risk condition, and minimize the overall risk exposure as demonstrated through the following:

- The licensee failed to expeditiously install temporary cooling to the 1A and 2A DGs as committed to in the License Amendment Request (LAR) that allowed the 14-day LCO which resulted in unnecessary unavailability of the DGs, when the RN header was drained and the temporary cooling was being installed, by not starting the work as soon as conditions permitted or working the job on a continuous basis.
- The licensee failed to post the roof area above the 1B and 2B DGs and adjacent support equipment as protected equipment as committed to in the LAR to ensure the operability of the remaining safety-related equipment was not jeopardized.
- The licensee allowed a mobile crane to traverse the roof area above the 2B DG prior to restoring the 2A DG to available status to minimize the potential impact this movement could have on an operable piece of safety-related equipment.
- The licensee failed to properly sequence the actions taken in restoring the A Train diesel generators to available status to ensure the 2A diesel generator was returned first, which was required to provide cooling to both A Train DGs in the event of a LOOP.
- The licensee failed to effectively communicate the elevated risk associated with planned work activities to station personnel to ensure that changes in work scope or

schedules were elevated to the appropriate personnel for review and assessment.

Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as PIP C-06-0057, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement manual (NCV 05000413, 414/2006002-01, Inadequate Risk Assessment and Management Associated with Planned Nuclear Service Water System Maintenance).

1R14 Operator Performance During Non-Routine Plant Evolutions and Events

a. Inspection Scope

The inspectors observed operator performance during the shutdown of Unit 2 for the refueling outage. The inspectors observed licensed operators' use of procedures, control room pre-evolution briefing, and plant equipment manipulations during the power reduction, manual reactor trip, and portions of the subsequent cooldown.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed five operability evaluations to verify that the operability of systems important to safety were properly established, that the affected components or systems remained capable of performing their intended safety function, and that no unrecognized increase in plant or public risk occurred. Operability evaluations were reviewed for the five issues listed below. Documents reviewed are listed in the Attachment.

- 2B Chemical & Volume Control (NV) charging pump oil leak (PIPs C-05-7243 and C-06-0197)
- Non-conservative setpoints for the reactor coolant system (NC) flow instrument loop uncertainty calculations (PIP C-06–0061)
- Top left stud on 2B DG crankcase door 8R was broken during reinstallation of the cover (PIP C-06-1238)
- 2A DG room ventilation system damper found to have a broken weld affecting its operation (PIP C-06-0997)
- Operability Assessment to determine past operability/reportability of the FWST to ND suction valves when realigning from Residual Heat Removal (RHR) mode to Injection mode while in Mode 4 (PIP C-06-0809)

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors witnessed and/or reviewed six post-maintenance testing procedures and/or test activities, as appropriate, for selected risk significant systems to verify if: (1) testing was adequate for the maintenance performed; (2) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (3) test instrumentation had current calibrations, range, and accuracy consistent with the application; (4) tests were performed as written with applicable prerequisites satisfied; and (5) equipment was returned to the status required to perform its safety function. Documents reviewed are listed in the Attachment.

- Verification of piping/flange integrity following completion of the B RN supply header 14-day LCO outage involving replacement of existing piping and addition of new cross-over connections
- Calibration and functional testing of B Train RN supply header annubar flow instrumentation
- Functional stroke testing of 2RN69B; B Train RN supply header isolation valve, following 14-day LCO outage work
- Operational testing of the 1B/2B RN pumps following the B Train RN LCO AOT
- Testing of the 1B RN pump strainer differential pressure switch following refurbishment of the strainer and associated instrumentation
- Functional test of the 1B RN pump strainer following refurbishment

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors evaluated Unit 2 refueling outage activities to verify that the licensee considered risk in developing and implementing outage schedules; adhered to administrative risk reduction methodologies developed to control plant configuration; developed mitigation strategies for losses of key safety functions; and adhered to operating license and TS requirements that ensure defense-in-depth. The following specific areas were reviewed. Documents reviewed are listed in the Attachment.

- Review of Outage Plan
- Monitoring of Shutdown Activities
- Licensee Control of Outage Activities
- Clearance Activities
- Reactor Coolant System Instrumentation
- Electrical Power
- Decay Heat Removal System Monitoring
- Spent Fuel Pool Cooling System Operation

- Inventory Control
- Reactivity Control
- Containment Closure
- Reduced Inventory and Mid-Loop Conditions
- Refueling Activities

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed and/or reviewed the six surveillance tests listed below to verify that TS surveillance requirements and/or Select Licensee Commitment requirements were properly complied with, and that test acceptance criteria were properly specified. The inspectors verified that proper test conditions were established as specified in the procedures, that no equipment preconditioning activities occurred, and that acceptance criteria had been met. Additionally, the inspectors also verified that equipment was properly returned to service and that proper testing was specified and conducted to ensure that the equipment could perform its intended safety function following maintenance or as part of surveillance testing. Documents reviewed are listed in the Attachment.

Surveillance Tests
- Flow balance of the A Train of RN following completion of the 14-day LCO AOT
- 1RN-28A; 1A RN pump discharge isolation valve, inservice test
- 2A DG EQC System Time Delay and Undervoltage Relay Calibration

In-Service Tests
- Quarterly In-Service Test for motor operated valve 1RN-63A; RN header A return to Standby Nuclear Service Water Pond

Ice Condenser Surveillance Tests
- MP/0/7/7150/006, Ice Condenser Lower Inlet Doors Inspection and Testing (As Found), Rev. 24
- MP/0/A/7150/005; Ice Basket Weight Determination (Unit 2, Bay 4, Baskets 6-9, 7-9, 8-9 and 9-9); Rev. 24

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the following two temporary plant modifications to determine whether the individual modification was properly installed; the modification did not affect system operability, drawings and procedures were appropriately updated; and post-modification testing was satisfactorily performed. Documents reviewed are listed in the Attachment.

- Installation of temporary cooling to the lube oil heat exchanger and air compressor aftercoolers on the 1A and 2A DGs in support for the 14-day A Train RN outage.
- Bypassing the non-essential chiller trips on the B Train control room area (YC) chiller in support for the 14-day A Train RN outage.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a Inspection Scope

The inspectors observed and evaluated the licensee's performance in the Control Room simulator and in the Technical Support Center during an emergency drill conducted on March 2. The NRC's assessment focused on the timeliness and location of classification, development of notification and protective action recommendations, and the licensee's expectations of response. The performance of the emergency response organization was evaluated against applicable licensee procedures and regulatory requirements. The inspectors attended the post-exercise critique of the drill to evaluate the licensee's self-assessment process for identifying deficiencies related to individual and overall performance during the emergency drill. The inspectors assessed the drill for weaknesses and deficiencies in performance of classification and notification requirements.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

.1 Daily Review

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed screening of items entered into the licensee's corrective action program. This was accomplished by reviewing copies of PIPs, attending some daily screening meetings, and accessing the licensee's computerized database.

.2 Annual Sample Review

a. Inspection Scope

The inspectors selected PIPs C-05-6471 and C-05-7516 for detailed review. Both involved increased outboard pump bearing temperatures on the 1B Spent Fuel Cooling pump. These PIPs were reviewed to determine whether the full extent of the issues were identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors evaluated the PIPs against the requirements of the licensee's corrective action program document and 10 CFR 50, Appendix B. Documents reviewed are listed in the Attachment.

b. Findings and Observations

No findings of significance were identified.

4OA5 Other Activities

.1 (Closed) URI 05000414/2004007-03: Derating Selected Emergency Lighting Units Required for Post-Fire Safe Shutdown

a. Inspection Scope

The inspectors preformed an in-office review of the documents listed in the Attachment to determine if the ability to achieve and maintain safe shutdown (SSD) was adversely affected.

b. Findings

Introduction. The inspectors identified a Green NCV of CNS operating License Condition 2.C.5, Fire Protection Program. The licensee made a change to the approved FPP which had the potential to affect post-fire safe shutdown capability. Specifically, the licensee derated the time requirement for 43 battery-powered ELUs from 8 hours to 1.5 hours. The licensee's evaluation for this change did not adequately demonstrate that the change would not adversely affect the ability to achieve and maintain SSD in the event of a loss of power to normal lighting during a fire.

Description. The licensee derated the time requirement for 43 battery-powered ELUs from 8 hours to 1.5 hours by minor modification CE-70695. These ELUs were credited for illumination of access/egress pathways or equipment for local manual operator actions associated with alternative shutdown. This change to the FPP was not consistent with the licensing basis, which stated that 8-hour battery-powered emergency lights would be provided. The justification for derating selected ELUs credited for post-fire SSD was provided in calculation CNC-1435.00-00-0018. The calculation stated that derating selected SSD ELUs was acceptable because access, operator activities, and egress could occur well within 30 minutes. However, as discussed in NRC Inspection Report 05000413, 05000414/2004007, the abnormal procedures in effect at the time of that inspection may not have activated the standby shutdown facility (SSF) within the 30-minute or 1.5-hour timeframes for fire events which may require activation of the SSF. Instead, the procedures directed operators to remain in the control room until it became uninhabitable or became incapable of maintaining primary or secondary inventory. Then the procedures directed operators to go to the alternate shutdown panel, in a lower level of the auxiliary building, and remain there until the controls there were determined to be inadequate to maintain safe plant conditions. Only then did abnormal procedures direct operators to activate the SSF. The delays in activating the SSF were not addressed in Calculation CNC-1435.00-00-0018 nor the 10 CFR 50.59 safety evaluation performed for minor modification CE-70695 and the associated Updated Final Safety Analysis Report (UFSAR) revision for this change.

Analysis. This finding is more than minor because it had the potential to impact the licensee's post-fire safe shutdown capability by delaying operator response in the event of a loss of power to normal lighting during a fire. Access, operator activities, and egress may occur at later times than assumed in the calculation for the derated ELUs. The finding was of very low safety significance (Green) because the inspectors determined that operators would likely be able to accomplish the actions with the use of flashlights.

Enforcement. Operating License Condition 2.C.5 requires that the licensee implement and maintain in effect all provisions of the approved FPP, as described in the UFSAR, as amended, for the facility and as approved in the Safety Evaluation Report (SER) through Supplement 5. Branch Technical Position (BTP) CMEB 9.5-1, which incorporated the guidance of Appendix A to BTP ASB 9.5-1 and the technical requirements of Appendix R to 10 CFR Part 50, established the regulatory and licensing requirements for the FPP at CNS. The CNS FPP was reviewed against and approved for conformance with BTP CMEB 9.5-1 in the SER through Supplement 5. BTP CMEB 9.5-1, Item C.5.g.(1), states, in part, that lighting is vital to safe shutdown and emergency response in the event of fire. In addition, fixed self-contained lighting consisting of fluorescent or sealed-beam units with individual 8-hour minimum battery-power supplies be provided in areas that must be manned for safe shutdown and for access and egress routes to and from all fire areas.

Contrary to the above, on June 25, 2004, the inspectors identified that the licensee's evaluations failed to ensure that the derating of selected ELUs from 8 hours to 1.5 hours would not adversely affect the ability to achieve and maintain safe shutdown in the event of a loss of power to normal lighting during a fire. Procedural delays for activating the

SSF were not addressed in either Calculation CNC-1435.00-00-0018 or the 10 CFR 50.59 safety evaluation performed for minor modification CE-70695. Access, operator activities, and egress may occur at times later than the 30 minutes or 1.5 hours assumed in the calculation for the derated ELUs. This condition has existed since May 2001. The licensee documented this violation in the corrective action program as PIP C-04-04276. The emergency light testing procedure, IP/0/B/3540/002, was changed from the 1.5-hour test period back to 8 hours. In addition, CNS also retested the derated ELUs for compliance with the 8-hour requirement. Twenty-three of the 43 ELUs provided less than the minimum 8-hour lighting requirement. The licensee replaced the batteries for the 23 ELUs. Because of the very low safety significance and the licensee has entered this violation into their corrective action program, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 05000414/2006002-02, Derating Selected Emergency Lighting Units Required for Post-Fire Safe Shutdown.

4OA6 Meetings

.1 Exit Meeting Summary

On April 12, the resident inspectors presented the inspection results to Mr. D. Jamil and other members of licensee management, who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection period.

.2 Annual Assessment Meeting Summary

On April 26, the NRC's Acting Chief of Reactor Projects Branch 1 and the Resident Inspectors assigned to the CNS met with Duke Energy Corporation to discuss the NRC's ROP and the NRC's annual assessment of CNS safety performance for the period of January 1, 2005 - December 31, 2005. The major topics addressed were: the NRC's assessment program and the results of the CNS assessment. This meeting was open to the public. A listing of meeting attendees and information presented during the meeting are available from the NRC's document system (ADAMS) as accession number ML061170325. ADAMS is accessible from the NRC Web site at *www.nrc.gov/reading-rm/adams.html*.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
K. Adams, Human Performance Manager
E. Beadle, Emergency Planning Manager
S. Beagles, Chemistry Manager
W. Byers, Security Manager
J. Ferguson, Safety Assurance Manager
J. Foster, Radiation Protection Manager
W. Green, Reactor and Electrical Systems Manager
G. Hamrick, Mechanical, Civil Engineering Manager
D. Jamil, Catawba Site Vice President
R. Hart, Regulatory Compliance Manager
A. Lindsay, Training Manager
J. Pitesa, Station Manager
L. Reed, Modifications Engineering Manager
R. Repko, Engineering Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Open and Closed

05000413,414/2006002-01	NCV	Inadequate Risk Assessment and Management Associated With Planned Nuclear Service Water System Maintenance (Section 1R13)
05000414/2006002-02	NCV	Derating Selected Emergency Lighting Units Required for Post-Fire Safe Shutdown (Section 4OA5.1)

Closed

05000414/2004007-03	URI	Derating Selected Emergency Lighting Units Required for Post-Fire Safe Shutdown (Section 4OA5.1)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment
OP/1/A/6400/005, Rev. 102; Component Cooling System

Section 1R05: Fire Protection
Pre-Fire Plan for Fire Strategy Area 2; Auxiliary Building 543 foot elevation; Rooms 260 and 260A
Pre-Fire Plan for Fire Strategy Area 21; Auxiliary Building 594 foot elevation, Room 573
Pre-Fire Plan for Fire Strategy Area 51; Exterior Doghouse
Pre-Fire Plan for Fire Strategy Area 18; Auxiliary Building 577 foot elevation
Pre-Fire Plan for Fire Strategy Area 6; Auxiliary Building 560 foot elevation, Room 370
Pre-Fire Plan for Fire Strategy Area 4; Auxiliary Building 543 foot elevation, Rooms 200 - 248
Pre-Fire Plan for Fire Strategy Area 30; RN Pump Structure
Catawba Nuclear Station Fire Drill Scenario 2005-5

Catawba Nuclear Station Fire Strategy M, Unit #1 Turbine Building, Elevation 594'
Nuclear System Directive 112; Fire Brigade Organization, Training and Responsibilities, Rev. 7
PIP C-05-0807; Fire brigade scenarios were conducted with insufficient number of evaluators/controllers to ensure adequacy of responders performance

Section 1R12: Maintenance Effectiveness

Minor Modification CD500832; Repairs of RN underground supply header leak identified on 2/22/06
Minor Modification VN CD500832A; Repairs of second RN underground supply header leak identified on 2/23/06
PIP C-06-1265; Unplanned Tech Spec entry - RN 72 hour LCO due to underground leak in the B train RN supply header
PIP C-05-6471, 1B Spent Fuel Pool Cooling Pump outboard bearing temperature in Hi alarm
PIP C-05-7516, 1B KF Pump outboard pump bearing temperature rose rapidly
PIP C-06-0798, 1B KF Pump rubbed during alignment and would not rotate freely due to improper radial centering following rebuilding pump
PIP C-06-1583, KF Pump 2A operational parameters are not as good as prior to rebuilding pump
PIP C-06-1618, The KF system is Maintenance Rule status A1 based on a Repeat Maintenance Preventable Functional Failure of 1B pump

Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation

A Train of RN outage schedule
B Train of RN outage schedule
Daily work control center scheduled work activities during the A Train RN outage
Daily work control center scheduled work activities during the B Train RN outage
Emerging Issue Training Package for the Nuclear Service Water System 14 Day LCO Modification Work, Rev. 02
2006 LCO Readiness Review Matrix dated 12/30/05
SWP Readiness Assessment dated 01/03/06
Open Items List for the RN LCO dated 12/30/05
Critical Evolution Plan for the 1A, 2A, 1B and 2B DG RN piping replacement, Rev. 1
Critical Evolution Plan for A & B train RN modification CD500175; 1(2)RN67A and 1(2)RN69B valve replacement, Rev. 1
SOER 91-01 Infrequently Performed Tests / Evolution Plan for the A and B RN train LCO AOT
Critical Evolution Plan for Modification CD500063, addition of isolation valves and spools in RN discharge header
Critical Evolution Plan for the A & B train RN supply header clean and coat project
Critical Evolution Plan for RN pump house LCO work on train A and B, Rev. 3
Critical Evolution Plan for A train RN return header modification, Rev. 1
PIP C-05-7587; Corrective actions from the SRG Independent Assessment Team Readiness review of the RN 14 day AOT windows
B Train RN AOT Readiness Action Register, dated 01/25/06
Catawba RN Outage NOED evaluation risk matrix
CNC-1535.00-00-0025; Section 9.7, 14 day LCO assuming backup YD cooling limitations
PIP C-06-1221; Inspect / repair potential RN header leak
Work Week 8 schedule (changes made following identification of potential RN header leak)

Unit Threat Team reports associated with the underground leak on the RN header
MP/0/A/7300/027, Mobile Crane Operations Over Safety Related Structures, Systems or Components, Rev. 002
MP/0/A/7400/056; Diesel Room Equipment Hatch Covers Removal and Replacement, Rev. 010
Service Water Project A Train Extended LCO Hi Level schedule
Catawba Nuclear Station Calculation 1139.13-02-0001, Crane loading analysis of the diesel generator building roofs, Rev. 32
Work Order WO 98714306, Task 41, Remove and replace DG 1A roof hatch
Work Order WO 98709781, Task 36, Remove and replace DG 2A roof hatch
Catawba Nuclear Station, Units 1 and 2, Issuance of License Amendments to allow on a one-time basis, the removal of a nuclear service water supply header from service for 14 days for system upgrades, dated November 17, 2005
NSD 213; Risk Management Process, Rev. 06
NSD 415; Operational Risk Management; Rev. 03
OMP 2-18; Equipment Protection and Quarantine, Rev. 066

Section 1R15: Operability Evaluations

WR 98367994; Inspect and repair diesel generator damper 2DSF D
CNS-1579.VD-00-0001, Diesel Building Ventilation Design Basis Document
WO 98721416; Perform inspection of damper and hydramotor on 2VD DA DSFD01
OAC traces for 2A diesel room ambient temperatures and outside air temperatures for diesel run dates
Design Basis Specification CNS-1579.VD-00-001; Diesel Building Ventilation System, Rev. 15
PIP C-06-1762; Return air dampers on the 2A DG rom ventilation system found to have gaps when the dampers were required to be fully closed
PIP C-06-1762, Document results of extent of condition inspection performed on VD system dampers

Section 1R19: Post-Maintenance Testing

MP/0/A/7650/088; Controlling procedure for systems pressure testing of ASME Section XI Duke Class A, B and C systems and components; Rev. 031
Modification Test Plan for Engineering Change CD500175; Unit 2 RN Train B
Modification Test Plan for Engineering Change CD500062; Rev. 3
TT/0/A/9100/100; Nuclear Service Water pump annubar calibration; Rev. 01
Emerson Process Management / Dietrich Standard field calibration report for the Catawba Nuclear Station annubar 1RNFE7510, 7520 and 2RNFE7510, 7520
CNR-1210.06-00-0002, Technical Requirements for RN pump discharge flow elements 1/2RNFE7510, 7520; Rev. 0
WO 98709787, Task 23; Perform functional test of 2RN069B under CD500174
PT/0/A/4400/022B; Nuclear Service Water Pump Train B Performance Test, Rev. 65, changes A and B
PT/0/A/4400/008B; RN Flow balance, Train B, Rev. 44
IP/0/A/3112/002; Calibration procedure for RN system time delay relays and strainer pressure switches; Rev. 27
IP/0/A/3816/010; Barton model 580 and 581 DP switch calibration; Rev. 27
WO 98755026; Task 42, Calibrate RN pump strainer DP switch
WO 98755026; Task 28; Functionally test the 1B RN pump strainer during functional test of the

1B RN pump
Modification Package CD500062; Installation and testing of RN system components

Section 1R20: Refueling Outage

PIP C-06-1876; PIP documenting the results of the Unit 2 Mode 3 Inside Containment Boric Acid Check for 2EOC14
PIP C-06-1873; PIP documenting the loss of reactor coolant pump oil during the Mode 3 walkdown
PIP C-06-1890; Main Steam Isolation Valve 2SM-005 failed to fully close when the close pushbutton was depressed
Westinghouse presentation on presence of whiskers on new fuel received for 2EOC14
PIP C-06-2062; 2B KF pump outboard seal failure requiring seal replacement prior to core offload
PIP C-06-1959; Critique comments on the Unit 2 cooldown from Mode 3 to Mode 5
PIP C-06-2035; Three incorrect baskets in the ice condenser were emptied due to expired data sheets being left in the ice condenser work book
CN-06-006, 2EOC-14-IRT Outage Risk Assessment
Site Directive 3.1.30, Unit Shutdown Configuration Control (Modes 4,5,6 or No Mode), Rev. 32,
NSD 403, Shutdown Risk Management (Modes 4, 5, 6 or No Mode), Rev. 14,
tagouts 05-2685, 2686, 2692 and 2693
PT/2/A/4150/001H, Inside Containment Boric Acid Check
PT/2/A/4350/003, Electrical Power Source Alignment Verification, Rev. 44.
PT/2/A/4200/002C, Containment Closure Verification (Part I); Rev. 62
PT/2/A/4200/002I, Containment Closure Verification (Part II); Rev. 34
PT/2/A/4200/002J, Containment Closure Verification Penetration Status Change; Rev. 12
PT/0/A/4150/037, Fuel/Component Movement Accounting; Rev. 6
PT/2/A/4550/001C, Refueling Communications Test; Rev. 15
PT/0/A/4150/017, Total Core Unloading; Rev. 32
PT/0/A/4150/017, Total Core Unloading Tailgate Briefing; Rev.
PT/2/A/4550/001D; Reactor Building Manipulator Crane Load test; Rev. 12
PT/2/A/4550/001E; Spent Fuel Building Manipulator Crane Load test; Rev. 7
Enclosure 4.2, Decreasing the NC System Level;
Enclosure 4.10, Requirements for Operation with the NC System Level Below 16%
OP/2/A/6150/006, Draining The Reactor Coolant System, Rev. 68
OP/2/A/6200/005, Spent Fuel Cooling System, Rev. 61
OP/0/A/6100/014, Penetration Control for Modes 5 and 6; Rev. 28
OP/1/A/6550/015; Receipt, Inspection and Storage of New Fuel, Rev. 30
OP/2/A/6550/006, Transferring Fuel with the Spent Fuel Manipulator Crane Rev. 49
OP/2/A/6550/007, Reactor Building Manipulator Crane Operation; Rev. 24
OP/2/A/6550/008, Fuel Transfer System Operation; Rev. 9
MP/0/B/7150/012, Refueling Canal Cleanliness; Rev. 6

Section 1R22: Surveillance Testing

PT/0/A/4200/013; RN Shared Valves Inservice Test; Enclosure 13.11; 1RN-63A Valve Inservice Test; Rev. 27
PT/0/A/4400/008A, RN Flow Balance Train A; Rev. 49
PT/1/A/4200/013C; RN Valve Inservice Test (Quarterly), Rev. 65
IP/2/A/3680/008A; DG 2A EQC Sys. Time Delay and Undervoltage Relay Calibration; Rev. 004
Complex Evolution Plan associated with the 2A DG PM work, dated 2/7/06
PIP C-06-487; Retest on valve 1RN-28A required following rework of the component

MP/0/A/7150/006, Ice Condenser Lower Inlet Doors Inspection and Testing, Rev. 24

Section 1R23: Temporary Plant Modifications

PIP C-06-0460; Temporarily raise the upper operability limit on the YC chillers to 220F
Design Change CD500733; Block the non-essential A and B YC Chiller Trips
Minor Modification CD500308; Provide temporary cooling to the 1A and 2A diesel generators in support of the A train RN LCO
Minor Modification CD500309; Provide temporary cooling to the 1B and 2B diesel generators in support of the B train RN LCO
OMP 2-31, Attachment 8.2; Increased surveillance sheet for monitoring the YC chiller during the 14 day LCO with several trips bypassed
YC chiller alarm response table for safety trips in override - dated 01/02/06
AP/1/A/5500/007; Enclosure 35, DG 1A local start during the 14 day LCO, Rev 47
AP/1/A/5500/007; Enclosure 36, DG 1A local start during the 14 day LCO, Rev 47
AP/2/A/5500/007; Enclosure 36, DG 2A local start during the 14 day LCO, Rev 46
AP/2/A/5500/007; Enclosure 37, DG 2A local start during the 14 day LCO, Rev 46
CNC-1535.00-00-0025; Section 9.7, 14 day LCO assuming backup YD cooling limitations

Section 4OA2: Problem Identification and Resolution

PIP C-06-1583, KF Pump 2A operational parameters are not as good as prior to rebuilding pump
PIP C-02-968, Elevated bearing oil temperatures on Unit 2B KF pump
PIP C-04-537, Discovered 2B KF pump IB pump bearing oil bubbler empty
PIP C-04-567, 2B KF pump inboard bearing oil bubbler empty
PIP C-04-858, KF pump bearing house needs to be vented
PIP 03-1394, The 1A KF motor inboard was found to be rubbed in axial direction
PIP 04-3950, 2A KF pump high inboard motor bearing temperature

Section 4OA5: Other Activities

AP/0/A/5500/045, Plant Fire, Rev. 002
IP/0/B/3540/002, Emergency Battery Lighting (ELD) Periodic Maintenance and Testing, Rev.32
CNC-1435.00-00-0018, Evaluation of Battery Powered Emergency Lights, Rev. 1
PIP C-04-04276, URI discussed in the TFPI - Catawba inspection issue
UFSAR Chapter 9.5.1, Fire Protection, dated 3/27/2003
W.O. 98705970-01 Emergency Battery Lighting (ELD) Periodic Maintenance, 12-07-04.